

## [54] TRACE VAPOR DETECTION

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[57]

## ABSTRACT

An apparatus is provided for detecting trace quantities of chemical species in the form of a vapor by subjecting ions produced in a sample of the mixed gas under flow to an ion repulsive electric field which is directed in the opposite direction to the flow of the gases, and comprises a fan for drawing the sample through a hollow body, having an inlet, a first region containing means for ionizing at least a proportion of the molecules of the sample by a corona discharge, a second region in which the sample is subjected to an oppositely directed ion repulsive electric field and a third region having an electrode for collecting ions of selected polarity. Ions of a selected polarity whose ionic mobilities exceed a value dependent on the strength of the ion repulsive electric field and the velocity of the gas flow are prevented from entering the third region. A resistor may be provided to limit the current of the corona electric discharge to a value not greater than 100 nanoamps.

23 Claims, 4 Drawing Figures

